

## EXECUTIVE SUMMARY

This report documents the methodology, results, assumptions, and limitations for the contaminant transport model for Hill Air Force Base (Hill AFB) Operable Unit (OU) 5 and OU 12. The groundwater modeling effort was divided into two phases: a numerical flow model and a numerical contaminant transport model, which is documented in this report.

The primary purpose of the groundwater transport model is to simulate contaminant transport in support of the OU 5 Remedial Investigation (RI) and Phase III Engineering Evaluation/Cost Assessment (EE/CA). The transport model was designed to assess not only plume migration and natural attenuation but also the effects that the OU 5 Aeration Curtain, the Phase II Groundwater Extraction System (GES), and the proposed OU 5 Phase III EE/CA Containment System may have on the future magnitude and extent of groundwater contamination. Contaminant transport model calibration was performed by varying model parameters and running the model until the predicted plume shapes best matched the current known plume configurations.

Four potential remediation alternatives were modeled for OU 5, namely:

1. No action (natural attenuation only, existing remediation systems not operating)
2. Operation of both the Aeration Curtain and the Phase II GES
3. Operation of the Aeration Curtain, but with the Phase II GES system inactive.
4. Operation of both the Aeration Curtain and the Phase II GES, with the addition of the Phase III EE/CA Containment System.

Based on the results of the predictive simulations performed for the period 2001 to 2050, it is apparent that natural attenuation alone will not remediate the TARS and OU 12 plumes as long as there are continuing sources of contamination on Base. Remedial systems in off-Base areas will decrease total cleanup times, but will not remediate the plumes completely. The Aeration Curtain greatly reduces contaminant concentrations entering Sunset in the TARS plume. The Phase II Groundwater Extraction System (GES) appears to reduce cleanup times by approximately 10 years, however it is likely that local heterogeneities that cannot be included in the model result in the model over-predicting the effectiveness of this system. The Phase III EE/CA substantially reduces the time required for remediation in the Clinton area, downgradient of the system.

Based on the results presented in this report, the most significant benefit from future remedial actions is obtained by removing or containing the source areas for the OU 5 and 12 plumes.